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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,269	01/14/2004	Jimmie Earl DeWitt JR.	AUS920030549US1	4136

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EXAMINER
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LAI, VINCENT

ART UNIT	PAPER NUMBER
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2181

DATE MAILED: 10/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/757,269	<b>Applicant(s)</b> DEWITT ET AL.	
	<b>Examiner</b> Vincent Lai	<b>Art Unit</b> 2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
FRITZ FLEMING  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The information disclosure statement (IDS) submitted on 1/14/2004 and 7/1/2005 was considered by the examiner.

### ***Response to Amendment***

2. Acknowledgement is made of the amendments to the specification and claims.
3. As stated in the Interview Summary, an erroneous objection to the drawings was made and has been withdrawn.
4. Objections to specification are withdrawn after considering amendments.
5. 35 USC 101 rejections are withdrawn after considering amendments.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 1-29 been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

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7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yates et al (U.S. Patent # 6,549,959), herein referred to as Yates in view of Holmberg (U.S. Patent # 6,233,679 B1).

As per **claim 1**, Yates teaches a method in a data processing system for processing instructions, the method comprising:

responsive to receiving an instruction at a processor in the data processing system (See column 9, lines 1-5: Computer receives and processes instructions), determining whether an indicator is associated with the instruction (See column 54, lines 39-41: The monitor knows which instructions are to be profiled), wherein the indicator identifies the instruction as one that is to be monitored by a performance monitor unit (See figure 1a and column 54, lines 33-35: A profiler 400 is made available to monitor execution of instructions);

enabling counting, by the processor, of each first event associated with a primary metric of the execution of the instruction if the indicator is associated with the instruction (See column 55, lines 54-58: Disclosure of a frequency means that a count is done), wherein the processor autonomically increments the count of the first events associated

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with the primary metric of the execution of the instruction in a first hardware counter (A counter inherently is able to increment a count when certain operations occurs);

determining if the count of the first events associated with the primary metric of the execution of the instruction stored in the first hardware counter satisfies a predetermined relationship with a threshold value (See column 55, lines 54-58: Done by looking at frequency of);

Yates does not teach counting with neither a hardware counter nor a second counter.

Holmberg does teach a second counter (See figure 2) and enabling counting, by the processor, of each second event associated with a secondary metric of the execution of a portion of code associated with the instruction (See column 4, line 54-column 5, line 2: A second counter is available for counter a separate event), wherein the processor autonomically increments the count of the second events associated with the secondary metric of the execution of a portion of code associated with the instruction in a second hardware counter (A counter inherently is able to increment a count when certain operations occurs). These counters would be hardware ones as figure 2 is directed to hardware counters.

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Yates with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy

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is likely to be increased. The performance indicator is another form of providing more data.

As per **claim 2**, Yates discloses wherein the instruction is received in an instruction cache in the processor (See figure 1C: Instruction cache 112).

As per **claim 3**, Yates discloses wherein the indicator is stored in a performance instrumentation shadow cache (See figure 1C: Issue buffer is in the convert stage which is where the indicator is affected) and wherein the processor checks the performance instrumentation shadow cache to determine whether the indicator is associated with the instructions (See column 67, lines 36-45: The abort in the convert stage will affect the profiler).

As per **claim 4**, Yates discloses wherein the instruction is received in a bundle by an instruction cache in the processor (See column 55, lines 53-54: Instructions are received as packets) and wherein the indicator comprises at least one spare bit in a field in the bundle (See figure 3g and 3k: Preambles are necessary for packets and the packet structure allows for other words of Tapestry context).

As per **claim 5**, Yates discloses wherein the indicator is a separate instruction (See figure 1a: All instructions are indicators since all instructions are monitored).

As per **claim 6**, Yates discloses wherein an event in the events includes at least one of an entry into a module, an exit from a module, an entry into a subroutine, an exit from a subroutine, an entry into a function, an exit from a function, a start of input/output, a completion of input/output, and the execution of the instruction (See figures 3B-3F: Code of modules, subroutines, functions, and other calls).

As per **claim 7**, Yates discloses wherein the determining whether an indicator is associated with the instruction comprises:

determining, by an instruction cache, whether the indicator is present in a field within the instruction (See figure 1a and column 54, lines 33-35: A profiler determines whether instructions are indicators).

As per **claim 8**, Yates teaches wherein the enabling step comprises:

sending a signal to a performance monitor unit (See figure 1a and column 54, lines 33-35: A profiler 400 is made available to monitor execution of instructions), wherein the performance monitor unit counts each event associated with execution of the instruction using the counter (See column 55, lines 54-58: Done with checking frequency).

Yates does not teach counting with neither a hardware counter nor a second counter.

Holmberg does teach a second counter (See figure 2) and enabling counting, by the processor, of each second event associated with a secondary metric of the

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execution of a portion of code associated with the instruction (See column 4, line 54- column 5, line 2: A second counter is available for counter a separate event), wherein the processor autonomically increments the count of the second events associated with the secondary metric of the execution of a portion of code associated with the instruction in a second hardware counter (A counter inherently is able to increment a count when certain operations occurs). These counters would be hardware ones as figure 2 is directed to hardware counters.

It would be obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Yates with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. The performance indicator is another form of providing more data. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to also allow the second counter to have similar properties to the first counter and thus be able to send a signal to the performance monitor unit.

As per **claim 9**, Yates teaches the use of a counter (See column 55, lines 54-58).

Yates does not teach a second counter and thus no combined counter value.

Holmberg does teach a second counter (See figure 2) and wherein the first hardware counter is a combined counter value hardware counter that stores a combined count from a plurality of other hardware counters (See column 4, line 64- column 5, line 2: One of the preferred modes of counting is a cumulative count).



It would be obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Yates with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. It is also obvious to a person having ordinary skill in the art that if a second counter were made available, then a cumulative counter would yield more data for better decisions to be made.

As per **claim 10**, Yates teaches generating an interrupt in response to a determination that the count of the first events meets or excess the threshold value (See column 55, lines 58-60); and

sending the interrupt to an interrupt handler of a performance monitoring application (See column 5, lines 11-13: This has to be inherently done with a interception else nothing would happen);

wherein the interrupt handler of the performance monitoring application initiates counting of each event associated with a metric of the execution of a portion of code associated with the instruction (See column 67, lines 36-45: The abort will affect the profiler).

Yates does not teach a second counter thus no secondary metric, or counting of a second event.

Holmberg does teach wherein enabling counting, by the processor, of each second event associated with a secondary metric (See column 5, lines 35-44: Several

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metrics are listed) of the execution of a portion of code associated with the instruction includes.

It would be obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Yates with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. It is also obvious to a person having ordinary skill in the art that if a second counter were made available, the ability to use a secondary metric would be made available with a second counter.

As per **claim 11**, Yates discloses wherein the interrupt handler instruments other instructions in the portion of code associated with the instruction to include the indicator (See column 55, lines 58-60).

As per **claim 12**, Yates teaches wherein the interrupt handler instruments other instructions in the portion of code associated with the instruction to include the indicator (See column 55, lines 58-60).

Yates does not teach a second counter.

Holmberg does teach a second counter (See figure 2).

It would be obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Yates with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can

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be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. In the case of the presence of a second counter, it would be obvious to implement functionality of a first counter with a second counter.

As per **claim 13**, Yates discloses wherein the portion of code associated with the instruction includes at least one of instructions of a same class of instructions as the instruction and instructions within a same method or routine as the instruction (See figure 3B-3F: Instructions are grouped together by type and are handled in routines as a group).

As per **claim 14**, Yates teaches a first metric (See column 55, lines 54-58: To count, there must be some sort of metric).

Yates does not teach a second metric.

Holmberg does teach wherein the first metric is different from the second metric (See column 4, line 64- column 5, line 2: Examples of different metrics are given).

It would be obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Yates with Holmberg because in the presence of two counters (see arguments above), it would not make sense to use one metric as then both counters would be making an identical count and thus one would be rendered useless.

As per **claim 15-28**, the claims are directed to similar limitations as claims 1-14, with the exception that the claims are directed to a computer program product in a recordable-type computer readable medium for processing instructions instead of a method in a data processing system for processing instructions, the computer program product being disclosed in Yates column 22, lines 31-46.

As per **claim 29**, the claim is directed to similar limitations as claim 1, with the exception that the claims are directed to an apparatus for processing instructions instead of a method in a data processing system for processing instructions, the apparatus being disclosed in Yates column 22, lines 31-46.

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent Lai whose telephone number is (571) 272-6749. The examiner can normally be reached on M-F 8:00-5:30 (First BiWeek Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz M. Fleming can be reached on (571) 272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

vl  
September 30, 2006

Vincent Lai  
Examiner  
Art Unit 2181

  
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10/2/2006